5.1. Introduction. The forward premium is meant to reflect the ratio of the current forward price on a stock to the stock price. The annualized forward premium (rate) also normalizes the forward premium using the length of time to the delivery date of the forward. Both measures are useful to try to infer the stock price in markets that do not have frequent trades in the underlying asset (so that the traders are not confident in the stock prices that were last observed a relatively long time ago).

5.2. Definition. As usual, let $F_{0,T}(S)$ denote the forward price for the delivery of asset $S$ at time $T$. Then, the forward premium is defined as

$$F_{0,T}(S). \quad \frac{S(0)}{S(0)}.$$ 

The annualized forward premium is defined as

$$\frac{1}{T} \ln \left( \frac{F_{0,T}(S)}{S(0)} \right).$$

5.3. Interpretation. Let us temporarily write $\alpha(S)$ for the annualized forward premium of the asset $S$. Then, for every $T$, we have

$$\alpha(S) = \frac{1}{T} \ln \left( \frac{F_{0,T}(S)}{S(0)} \right) \quad \Rightarrow \quad F_{0,T}(S) = S(0)e^{\alpha(S)T}.$$ 

Let us look at the simple case of an asset which pays continuous dividends at the rate $\delta$. We still denote the continuously compounded interest rate by $r$. Then, the above equality gives us
5.4. Problem. The current price of a stock is $S(0) = 125$ per share. Let the stock pay continuous dividends at the continuous dividend rate $\delta$. Assume that the continuously compounded interest rate equals $r = 0.3$. The prepaid forward price for delivery of the above stock in two years is $83.79. Calculate the annualized forward premium (rate).

5.5. Forwards and arbitrage: An example. Suppose that the current price of a dividend-paying stock equals $1,000. Let $r = 0.25$ and $\delta = 0.15$. You notice that a forward price for delivery of this stock in two-years equals $F = 1,200$. You suspect that this forward price creates an arbitrage opportunity.